AMENDMENT

IN THE CLAIMS

Please cancel Claim 16.

Please amend Claims 15, 19, 22, and 23, and add new Claims 30-32, as indicated below:

Claims 1-14 (canceled).

15. (Currently Amended): A mutant polymerase comprising a Y-GG/A amino acid motif between an N-terminal 3'-5' exonuclease domain and a C-terminal polymerase domain wherein the tyrosine of the Y-GG/A amino acid motif is substituted with another amino acid, wherein the mutant polymerase is suitable for polymerase chain reactions, and wherein the wild-type form of the mutant polymerase has at least 80 % amino acid homology to SEQ ID NO:34.

16. (Canceled).

17. (Previously Added): The mutant polymerase of Claim 15 wherein the wild-type form of the mutant polymerase is obtainable from Euryarchaea.

18. (Previously Added): The mutant polymerase of Claim 15 wherein the wild-type form of the mutant polymerase is obtainable from *Thermococcus aggregans*.

19. (Currently Amended) The mutant polymerase of Claim 15 wherein the wild-type form of the mutant polymerase is SEQ ID NO:34, and wherein the difference between the mutant polymerase and the wild-type form consists of the single amino acid substitution of the tyrosine of the Y-GG/A amino acid motif.

20. (Previously Added): The mutant polymerase of Claim 15 wherein the tyrosine of the Y-GG/A amino acid motif is substituted with an amino acid with an aromatic side chain.

21. (Previously Added): The mutant polymerase of Claim 20 wherein the tyrosine of the Y-GG/A amino acid motif is substituted with a phenylalanine, a tryptophan or a histidine.

22. (Currently Amended) The mutant polymerase of Claim 15 wherein the tyrosine of the Y-GG/A amino acid motif is substituted with an amino acid with a [a] hydrophilic side chain.

23. (Currently Amended) The mutant polymerase of Claim 22 wherein the tyrosine of the Y-GG/A amino acid motif is substituted with an asparagine [or a serine].

24. (Previously Added): A DNA encoding the mutant polymerase of Claim 15.

25. (Previously Added): A vector comprising the DNA of Claim 24.

26. (Previously Amended) An isolated host cell comprising the DNA of Claim 24 or the vector of Claim 25.

27. (Previously Amended) A process for obtaining a mutant polymerase comprising purifying the mutant polymerase from the isolated host cell of Claim 26.

28. (Previously Added): A process for synthesizing nucleic acids, comprising contacting the mutant polymerase of Claim 15 with nucleotides, a primer and a polynucleotide template under conditions suitable for elongation of the primer.

29. (Previously Added): A process for polynucleotide amplification comprising contacting the mutant polymerase of Claim 15 with nucleotides, primers and a polynucleotide template under conditions suitable for amplification of the polynucleotide.

30. (New) The mutant polymerase of Claim 21 wherein the tyrosine of the Y-GG/A amino acid motif is substituted with a tryptophan or a histidine.

31. (New) The mutant polymerase of Claim 22 wherein the tyrosine of the Y-GG/A amino acid motif is substituted with a serine.

32. (New) A polymerase chain reaction process comprising contacting the mutant polymerase of Claim 15 with nucleotides, a primer and a polynucleotide template under conditions suitable for amplification of the polynucleotide template.